

College Preparatory Mathematics (CPM)
Algebra 2 Connections, Algebra II

Degree of Evidence regarding the Standards for Mathematical Practice:

Limited Evidence

Summary of evidence:

1. **Make sense of problems and persevere in solving them.** There are many open-ended problems presented throughout the text, but the problems in the student workbook are more closed. There are some opportunities to establish connections among tables, graphs, equations, and situations. (One such opportunity could be found on p. 272 #6-38.) Students are directed to explain their findings regularly in groups and in a “Learning Log”, or math journal, but it would be up to the teacher to facilitate these opportunities to explain and analyze. There are opportunities for reflection at the end of each chapter in the Closure sections (p.176-181) and could be easily skipped. It would be up to the teacher to implement the activities for reflection. Discussion Points (e.g. p.249) throughout the text help guide students as they work in groups to analyze the concepts. Overall, there are frequent opportunities for students to tackle problems on their own, though the text seems to lack a variety of open-ended problems. There are many opportunities for students to create a problem-solving plan and follow through as well as to determine reasonableness. Teacher implementation of the activities would be crucial to the development of explanations and analysis.
2. **Reason abstractly and quantitatively.** There are many application problems ingrained within each chapter reviewed. Appropriate units are frequently used in the problems. The students are often directed to create a model to represent the problem situation, whether with technology or hands-on manipulatives. Connections between applications and the representation using symbols are present. Most questions are solved by applying an algorithm, which the students have generalized for themselves through the discovery investigations.
3. **Construct viable arguments and critique the reasoning of others.** In the chapters reviewed, there are opportunities for students to explain their reasoning. Exercises frequently require students to justify their answers. In the chapters reviewed, students are constantly directed to share ideas within their cooperative learning team and to then be prepared to share their findings with the class. The teacher could then facilitate a discussion requiring students to critique each other’s reasoning. Explanations and discussion of justification are present in the chapters reviewed (e.g. p.285 #6-81). The teacher resource also details strategies to facilitate the discussion as well as to help teachers anticipate common misconceptions. Overall, there are frequent opportunities for students to justify their thinking in writing. Opportunities for discussion will rely on teacher facilitation of the activities and practice problems.
4. **Model with mathematics.** In the chapters reviewed, students are frequently directed to create a model. Problems have students model a problem scenario with tables, graphs, and equations. It seems that most of the exposure to modeling relies heavily on the resource pages included in the teacher notebook for duplication. In the application questions, answers are in context. Overall, there are some opportunities for students to create mathematical models, but these opportunities depend on teacher implementation and the incorporation of the resource pages.
5. **Use appropriate tools strategically.** In the sample reviewed, students are asked to use rulers, protractors, technology, and other hands-on materials to help them in the exploration of concepts through the investigations. It would be up to the teacher to include these investigations in the course to help students grapple with various tools, since the practice problems are few and tend to just review previous concepts. There is limited reference to the use of graphing calculators in the

student resource for the chapters reviewed (e.g. p.288). The use of technology is suggested, but this text does not seem to advocate for technology over other methods. Overall, there is the potential for technology use, but it would be up to the teacher to incorporate. Concepts are presented for investigation, but it seems the investigations are not extensive enough to build on prior learning and guarantee student mastery of the new concept. There is little evaluation of which tools or strategies will be best to use in the given problem situation.

6. **Attend to precision.** Examples use proper notation and are precise. In the chapters reviewed, examples of precise communication were not present, though students are frequently directed to communicate about the mathematics, whether through writing or speaking. Students are given opportunities to share and discuss their responses when completing investigations, but it would depend on implementation by the teacher. Overall, there is attention to precision in the examples, but no examples of precise communication for students to analyze. The fostering of precise communication would rely on teacher facilitation of the student investigations.
7. **Look for and make use of structure.** In the chapters reviewed, there are many opportunities for students to look at examples and then to generalize the mathematical rule or truth. Every lesson is organized with several problems for students to investigate and complete on their own, deriving the mathematical rules and concepts on their own. Every lesson has students go back and review past learning, but there is little opportunity to practice the current concepts. Practice over the current concepts being learned would require the purchase of the student workbook in addition to the student textbook. There are many opportunities for students to generalize their thoughts, within the “Learning Log” and the class discussions, if implemented by the teacher.
8. **Look for and express regularity in repeated reasoning.** Students are often asked to look at a scenario to make generalizations, but in the student text there are limited examples of students being asked to notice patterns and to generalize. Investigations heavily rely on the separate teacher resources. There are many opportunities for students to generalize a pattern to determine a rule. Opportunities to meet this standard would depend on the teacher taking the initiative to incorporate the investigations in to the course.